Photovoltaics (PV) and Solar Energy

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Southwest Technology Development Institute (SWTDI)

- In operation for 30 years at NMSU
- Funded entirely through competitive awards for the last 9 years (received federal earmark funding in the late1990's- early 2000's)
- SWTDI is a contract-funded applied research institute operated by engineering research staff.
- 2/3 of our funding comes from Federal sources (Department of Energy, Department of Defense, and Sandia National Laboratories), 1/3 comes from private industry, utility companies, etc.

Example 1: Support for public agencies - Navajo Tribal Utility Authority (NTUA)

- 10,000 remote homes on Navajo Reservation without electric power.
- NTUA management approved an experimental program to deploy and assess 15 stand-alone photovoltaic (PV) systems.
- Sandia, with a long history of supporting the tribes, hired SWTDI to train NTUA electricians in PV fundamentals, system installation, troubleshooting and repair.
- SWTDI recognized the need for and produced training materials for the NTUA customer service staff.
- SWTDI developed a low cost, 4-channel monitoring device (nanoDAS) for electricians to use to diagnose system problems.
- Final Outcome: NTUA management determined that PV is an effective solution to power remote homes. NTUA purchased over 400 stand alone PV systems from Sacred Power (Albuquerque).

Example 2: Support for private industry - Lennox Industries

- 2008: Lennox Industries designed a PV-assisted residential heat pump with the goal of reducing peak load and improving energy efficiency over conventional products. SWTDI was hired to test the performance of this new product.
- SWTDI (John Wiles) installed serial number 1 of these units on our office building in Las Cruces.
- SWTDI assessed the unit for code compliance and monitored performance of the fielded unit to document energy and cost savings.
- SWTDI assisted with writing the product's user manual.
- Final Outcome: In 2009, the Lennox SunSource PV assisted heat pump became a catalog item for sale throughout North America (and we kept our new heat pump).

Example 3: National Leadership -
Solar America Board for Codes and Standards (Solar ABCs)

- 2007: U.S. Department of Energy announced a funding opportunity to create and lead a single organization that would consolidate all of its dispersed efforts in solar technology-related codes and standards.
- SWTDI assembled a team of universities, private industry, nationally recognized testing laboratories (e.g. UL), and national laboratories.
- SWTDI was awarded the contract which we branded with the name: Solar America Board for Codes and Standard (SolarABCs, www.solarabcs.org).
- SWTDI established SolarABCs as an organization based on inclusion, dedicated to consensus, and capable of finding solutions to complex problems facing actively evolving technologies.
- Originally awarded as a 5-year, $4.2 M program, SolarABCs later received an extension to become a 6-year, $5M program.

Example 3: Continued -
Solar America Board for Codes and Standards (Solar ABCs)

- Why is this important: Codes and standards are essential to healthy markets. For a rapidly evolving technology like PV, they have to be ready to enable new technologies as they become available. They serve to provide confidence to buyers that products are safe and reliable and they provide market assurance to investors that their capital is going to companies making products that meet the minimum standards and are ready for sale and commerce.
- Last month SWTDI concluded this 6-year program. It was the last of the Bush-era Solar America Initiative programs and, arguably, the most productive of its kind. During our 6-year tenure, SolarABCs met and overcame many challenges of national importance that threatened to shut down or inhibit the growing use of PV in the U.S.